

Office Action Summary	Application No. 10/712,621	Applicant(s) JHA ET AL.	
	Examiner Joseph W. Drodge	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-29, 40-45, 51, 53, 54, 62-69, 71 and 72 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-29, 40-45, 51, 53, 54, 62-69, 71 and 72 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

NON-FINAL REJECTION

The indicated allowability of claims 21-29,40-45,and 51,62 and claims dependent therefrom is withdrawn in view of newly discovered reference(s), including Huffman patent 3,786,924 and Clark et al patent 3,679,055. Rejections based on the newly cited reference(s) follow.

Rejoinder: Arguments at page 2 of the Remarks in view of amending of various of the restricted claims are persuasive and the claims have been rejoined. Because all claims previously withdrawn from consideration under 37 CFR 1.142 have been rejoined, **the restriction requirement as set forth in the Office action mailed on 03/11/2010 is hereby withdrawn.** In view of the withdrawal of the restriction requirement as to the rejoined inventions, applicant(s) are advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Once the restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 21,22,27 and 40-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Bauman patent 3,630,378.

Bauman, in the embodiment of figure 2, discloses treatment system , and corresponding method of treating water with such apparatus comprising: point of entry 12, reservoir system (tank 21), at least one water treatment device comprising reverse osmosis treatment unit 14, electrochemical or electrodeionization (EDI) device (22), point of use 17 inferring a household appliance for washing, cooking, humidifying, air conditioning etc. (column 1, lines 23-28 & see column 4, lines 38-44) which is fluidly connected and fluidly downstream of the storage tank and auxiliary point of use 16 as 'service water' to use for an appliance such as flushing toilets etc. (see column 1, lines 25-29) that is fluidly connected to a waste stream (from the electrochemical device and downstream thereof, so as to (see figure 2) permit recirculation through the tank. For the method claims starting with claim 40, un-desired ion species of soluble salts and hardness-causing ions are removed by the electrochemical device (column 1, lines 8-15, etc.).

For claims 22 and 41, the reservoir is at line pressure or if necessary pressurized further by booster pump (col 4, ln 58-65 etc.). The treated water is for household use (col 1, ln 23-29) for claim 42. Recitation of the use being for washing or cooking infers appliances such as dishwashers and stovetops as in claim 27.

Claim 68 is rejected under 35 U.S.C. 102(b) as being anticipated by Clark et al patent 3,679,055. Clark et al disclose pressurized fluid tank or reservoir and reverse osmosis device

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(Abstract) with a heat exchanger (col 5, ln 11-14) to assist in cooking foods or providing hot beverages.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 23-25 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Sato et al patent 6,733,646 and/or Huffman patent

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3,786,924 . These claims further differ by requiring pretreatment prior to passage through EDI device, including a carbon filter or reverse osmosis device, although Bauman teaches use of RO as an alternative to EDI water treatment. Sato teaches treating water for household use and pretreatment of the water by activated carbon and RO filters (see example 1). It would have been obvious to the skilled water treatment artisan to have utilized the pretreatment means of Sato in combination with use of an EDI unit, to more thoroughly remove salts and dissolved solids, including silica and boron. Like Bauman, Huffman discloses a household water treatment system comprising reverse osmosis membrane coupled with storage vessels for both the raw and treated water and supplying of treated water to household uses or appliances and waste water to auxiliary uses (Abstract, figure, column 3, lines 28-47 and column 1, lines 12-27). See columns 4-5 regarding pressurized storage tanks/vessels for the raw and treated water. The feed water in Huffman is pretreated by a filter to remove larger solids so as to prolong the life of the main water treatment system and also the system pumps (column 3, lines 48-58).

Claims 23,26,44 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Gadini patent 6,766,812 and if necessary in view of Huffman patent 3,786,924 and/or Latham patent 2,777,814. Gadini also teaches pretreatment of water as required by claims 23 and 44 (not disclosed by Bauman) so as to remove impurities, sand and iron residues that could damage the EDI unit (col 15, ln 50-58); household use of EDI treated water including use in appliances such as washing machines or other water-using appliances (col 15, ln 43-47 and col 16, ln 20-25) since purified, treated water is necessary for their operation for claim 27. Latham teaches pretreatment of water upstream of entering a whole

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house electrodeionization unit so as to minimize accumulation of dissolved solids on the membranes or other components of the EDI unit (col 1, ln 64-col 2, ln 9 and col 2, ln 53-58).

Claims 26 and 45 also require the system to have a controller operable for adjusting operating parameters of the EDI device. However, Gadini teaches such control system for controlling flow rates through the system as well as voltage and power adjustments to the EDI UNIT so as to optimize EDI performance in removing water impurities (col 15, ln 1-9 and 21-34).

Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Hirayama patent 6,461,512 or Latham patent 2,777,814 or Clark et al patent 3,679,055. Claim 28 requires a heat exchanger thermally connected to the reservoir system. Hirayama of record teaches use of such heat exchanger HE1 upstream of a tank or reservoir that precedes an RO unit and EDI water treatment unit for the purpose of sterilizing the water and killing bacteria (col 1, ln 50-col 2, ln 21 and col 2, ln 30-38). Latham teaches to heat household water in proximity to treatment by an EDI device (col 1, ln 65-col 2, ln 30) so as to supply water which is both treated and heated for domestic uses and appliances requiring heated, purified water (col 1, ln 15-20). If necessary, Clark et al disclose pressurized fluid tank or reservoir and reverse osmosis device (Abstract) with a heat exchanger (col 5, ln 11-14) to assist in cooking foods or providing hot beverages.

Claims 29 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Huffman patent 3,786,924. These claims require the auxiliary use to comprise an irrigation system. Like Bauman, Huffman discloses a household

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water treatment system comprising reverse osmosis membrane coupled with storage vessels for both the raw and treated water and supplying of treated water to household uses or appliances and waste water to auxiliary uses (Abstract, figure, column 3, lines 28-47 and column 1, lines 12-27). Huffman at column 3, lines 38-43 and column 1, lines 23-27 teaches that flushing of toilet tanks and irrigation systems for lawn watering are interchangeable uses for the waste water from household water treatment systems like reverse osmosis devices, since neither requires water of high purity or of low hardness. It would have been additionally obvious to have utilized the service water either directly for irrigation purposes or to a system encompassing flushing of toilets and additionally directing of service water to irrigation, as taught by Huffman, to achieve increased water conservation and reduce water disposal needs.

Claims 51,53,68 and 69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Latham patent 2,777,814. Bauman, in the embodiment of figure 2, discloses treatment system, and corresponding method of treating water with such apparatus comprising: point of entry 12, reservoir system (tank 21), at least one water treatment device comprising reverse osmosis treatment unit 14, electrochemical or electrodeionization (EDI) device (22), point of use 17 inferring a household appliance for washing, cooking, humidifying, air conditioning etc. (column 1, lines 23-28 & see column 4, lines 38-44) which is fluidly connected and fluidly downstream of the storage tank and auxiliary point of use 16 as 'service water' to use for an appliance such as flushing toilets etc. (see column 1, lines 25-29) that is fluidly connected to a waste stream (from the electrochemical device and downstream thereof, so as to (see figure 2) permit recirculation through the tank. The means for accumulating is maintained at elevated pressure as in part provided by line pressure and in part

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provided by booster pumps at various locations (column 1, lines 40-54 and column 4, lines 52-65).

The claims differ by requiring means for heating the water. Latham teaches to heat household water in proximity to treatment by an EDI device (col 1, ln 65-col 2, ln 30) so as to supply water which is both treated and heated for domestic uses and appliances requiring heated, purified water (col 1, ln 15-20).

For claim 53, Latham teaches the pretreatment at column 2, lines 52-57 in order to minimize buildup of scale on the components such as membranes of the EDI or related electrochemical device.

Claim 54 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Latham patent 2,777,814 as applied to claims 51,53,68 and 69 above, and further in view of Gadini patent 6,766,812. Claim 54 also requires the system to have a controller operable for adjusting operating parameters of the EDI device. However, Gadini teaches such control system for controlling flow rates through the system as well as voltage and power adjustments to the EDI UNIT so as to optimize EDI performance in removing water impurities (col 15, ln 1-9 and 21-34).

Claims 62,63, and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Gadini patent 6,766,812. Bauman, in the embodiment of figure 2, discloses treatment system , and corresponding method of treating water with such apparatus comprising: point of entry 12, reservoir system (tank 21), at least one water treatment

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device comprising reverse osmosis treatment unit 14, electrochemical or electrodeionization (EDI) device (22), point of use 17 inferring a household appliance for washing, cooking, humidifying, air conditioning etc. (column 1, lines 23-28 & see column 4, lines 38-44) which is fluidly connected and fluidly downstream of the storage tank and auxiliary point of use 16 as 'service water' to use for an appliance such as flushing toilets etc. (see column 1, lines 25-29) that is fluidly connected to a waste stream (from the electrochemical device and downstream thereof, so as to (see figure 2) permit recirculation through the tank. The means for accumulating is maintained at elevated pressure as in part provided by line pressure and in part provided by booster pumps at various locations (column 1, lines 40-54 and column 4, lines 52-65).

Claims 62,63 and 65 also require the system to have a method step or controller operable for adjusting operating parameters of the EDI device. However, Gadini teaches such control system for controlling flow rates through the system as well as voltage and power adjustments to the EDI UNIT so as to optimize EDI performance in removing water impurities (col 15, ln 1-9 and 21-34).

Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Gadini patent 6,766,812, as applied to claims 62,63 and 65 above, and further in view of Latham patent 2,777,814. Claim 64 also differs by requiring means for heating the water. Latham teaches to heat household water in proximity to treatment by an EDI device (col 1, ln 65-col 2, ln 30) so as to supply water which is both treated and heated for domestic uses and appliances requiring heated, purified water (col 1, ln 15-20).

Claims 66 and 67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Gadini patent 6,766,812, as applied to claims 62,63 and 65 above and further in view of Giuffrida et al patent 4,956,071. Claims 66 and 67 also differ by requiring that the control of electrochemical device comprise reversing of electric field polarity (66) or adjusting of time delay between reversing cycles (67). Giuffrida teaches control of EDI electrochemical device to include such polarity reversing and timing of reversing cycles in order to remove accumulated debris and solids especially organics, and eliminate scaling, so as to restore optimum operation and separation capacity (see column 1, lines 25-29, Abstract and column 3, lines 25-51).

Claims 71 and 72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bauman patent 3,630,378 in view of Latham patent 2,777,814. Claims 71 and 72 specify that the introduced water is fed into a concentrating compartment of the EDI device. Latham, in an early simplified household electrochemical water treatment system, demonstrates in figures 1 and especially figure 2, to introduce water from the point of entry and reservoir tank through flow path 2/1/4/8 to the bottom of an electrodialysis or electrodeionization device where it is distributed by partitions 11 and 12 to flow into concentrating compartments defined in between ion exchange membranes or diaphragms so as to clearly separate waste stream 10/19 from purified fluid stream 9; see column 2, lines 31-53 and column 1, lines 65-column 2, line 5, in order to clearly segregate purified from waste water and enable control of the flow rate of waste water and thus residence time in the EDI unit. For claim 72, Bauman has specified that the EDI waste stream is either fed to drain or to an auxiliary use.

Applicant's arguments filed on 6/25/2010 have been fully considered but they are not persuasive. Concerning Bauman it is argued that the passage of column 1, Bauman concerning wastefulness of using treated water for flushing of toilets only suggests flushing with untreated water. It is submitted that the argument takes the column 1 passage out of context. When considered in combination of passages at column 1, lines 40-57 ; column 3, lines 12-24 with lines 33-40 and 59-62, the reference is stating that the waste water or brine from either the reverse osmosis unit or EDI electrochemical treatment unit may alternately be passed to drain or the sewer or provided as service water to supply uses such as flushing toilets by providing an ample supply of service water at line or elevated pressure.

Applicant's arguments with respect to claims 29 and 43 concerning irrigation system have been considered but are moot in view of the new ground(s) of rejection. Huffman is more clearly deemed to teach service waste water from a household reverse osmosis device applied to either of flushing toilets, irrigation or various other end or auxiliary uses.

For claims 23-25, it is submitted that Latham, in particular, more clearly than in Sato, teaches pretreatment of water upstream of an electrochemical device used for purifying household supply water. Relative to teachings of Gadini, Hirayama for other dependent claims; these references were utilized to teach obviousness of tertiary features and not relied upon for any suggestion of using waste water for an auxiliary use.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Additional prior art is cited concerning household distribution systems including water treatment and routing of either raw water or recycled gray water for irrigation purposes.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at his direct government telephone number of 571-272-1140. The examiner can normally be reached on Monday-Friday from approximately 8:00 AM to 1:00PM and 2:30 PM to 5:30 PM.

Alternatively, to contact the examiner, send a communication via E-mail communication to the Examiner's Patent Office E-mail address: "Joseph.Drodge@uspto.gov". Such E-mail communication should be in accordance with provisions of MPEP (Manual of Patent Examination Procedures) section 502.03 & related MPEP sections. E-mail communication must begin with a statement authorizing the E-mail communication and acknowledging that such communication is not secure and will be made of record, under Patent Internet Usage Policy Article 5. A suggested format for such authorization is as follows: "Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file.

Additionally, the examiner's supervisor, Duane Smith, of Technology Center Unit 1797, can be reached at 571-272-1166.

The formal facsimile phone number, for official, formal communications, for the examining group where this application is assigned is 571-273-8300. The facsimile phone number for informal communication directly with the examiner is 571-273-1140.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD
7/16/2010
/Joseph W. Drodge/
Primary Examiner, Art Unit 1797